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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/CEMENT/2014-15

Date: 28.06.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE ID	:	Cement
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-1989
1	a) Initial Setting Time	IS-4031 (Part -5)	175 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	460 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	28.50 %	-

Note:

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.07/KRIDL/SAND/2014-15 : 28.06.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : Sand Total Wt. of Aggregates in gms **2000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	83	4.15	4.15	95.9	90-100
2.36	267	13.35	17.50	82.5	75-100
1.18	482	24.10	41.60	58.4	55-90
600 Micron	421	21.05	62.65	37.4	35-59
300 Micron	513	25.65	88.30	11.7	8-30
150 Micron	178	8.90	97.20	2.8	0-10

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15

28.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25700**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	990	990	3.9	96.1	95-100
22.4	5485	6475	25.2	74.8	60-80
11.2	5695	12170	47.4	52.6	40-60
4.75	4050	16220	63.1	36.9	25-40
2.36	3995	20215	78.7	21.3	15-30
0.600	2595	22810	88.8	11.2	8-22
0.075	2605	25415	98.9	1.1	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 28.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 27985

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	955	955	3.4	96.6	95-100
22.4	9026	9981	35.7	64.3	60-80
11.2	5114	15095	53.9	46.1	40-60
4.75	4010	19105	68.3	31.7	25-40
2.36	3462	22567	80.6	19.4	15-30
0.600	2148	24715	88.3	11.7	8-22
0.075	2345	27060	96.7	3.3	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 28.06.2014

GRADATION FOR WMM
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Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **29075**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1025	1025	3.5	96.5	95-100
22.4	9125	10150	34.9	65.1	60-80
11.2	5237	15387	52.9	47.1	40-60
4.75	4159	19546	67.2	32.8	25-40
2.36	3528	23074	79.4	20.6	15-30
0.600	2457	25531	87.8	12.2	8-22
0.075	2689	28220	97.1	2.9	0-8

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GRADATION FOR WMM
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Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **29245**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec:Limits
53	0	0	0	100	100
45	825	825	2.8	97.2	95-100
22.4	9125	9950	34.0	66.0	60-80
11.2	5128	15078	51.6	48.4	40-60
4.75	4236	19314	66.0	34.0	25-40
2.36	3687	23001	78.6	21.4	15-30
0.600	2798	25799	88.2	11.8	8-22
0.075	2531	28330	96.9	3.1	0-8

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GRADATION FOR WMM
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Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 29530

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	910	910	3.1	96.9	95-100
22.4	9287	10197	34.5	65.5	60-80
11.2	5313	15510	52.5	47.5	40-60
4.75	4218	19728	66.8	33.2	25-40
2.36	3624	23352	79.1	20.9	15-30
0.600	2517	25869	87.6	12.4	8-22
0.075	2419	28288	95.8	4.2	0-8

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Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **26203**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	845	845	3.2	96.8	95-100
22.4	6459	7304	27.9	72.1	60-80
11.2	4867	12171	46.4	53.6	40-60
4.75	3749	15920	60.8	39.2	25-40
2.36	3521	19441	74.2	25.8	15-30
0.600	4152	23593	90.0	10.0	8-22
0.075	1845	25438	97.1	2.9	0-8

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GRADATION FOR WMM
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Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 26645

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	865	865	3.2	96.8	95-100
22.4	7835	8700	32.7	67.3	60-80
11.2	5174	13874	52.1	47.9	40-60
4.75	5158	19032	71.4	28.6	25-40
2.36	2592	21624	81.2	18.8	15-30
0.600	2249	23873	89.6	10.4	8-22
0.075	2027	25900	97.2	2.8	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15 28.06.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	28.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	383	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	82.5	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	300.5	300	
4	Aggregate Impact value = percent fines	21.73	21.54	21.88	
	100* (W_2/W_1)%				**21.71**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

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Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	28.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	299	299	
4	Aggregate Impact value = percent fines	21.58	21.73	22.14	
	100* (W_2/W_1)%				21.81

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Comments:

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Aggregate Impact Value

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Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	28.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	298	298	
4	Aggregate Impact value = percent fines	21.11	21.78	22.19	
	100* (W_2/W_1)%				21.70

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	28.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	298	298	
4	Aggregate Impact value = percent fines	21.52	22.19	22.60	
	$100^* (W_2/W_1)\%$				22.10

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 28.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	28.06.2014

Result : Flakiness Index = **12.46%**

Elongation Index = **13.39%**

Result : Combined Flakiness & Elongation index 25.85%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No,07/KRIDL/WMM/Shape.T/2014-15 . : 28.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 28.06.2014

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Result : Flakiness Index = **11.32%**

Elongation Index = **13.42%**

Result : Combined Flakiness & Elongation index **24.74%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 28.06.2014

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Result : Flakiness Index = **11.56%**

Elongation Index = **13.49%**

Result : Combined Flakiness & Elongation index **25.05%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 28.06.2014

Result : Flakiness Index = **11.68%**

Elongation Index = **13.79%**

Result : Combined Flakiness & Elongation index **25.47%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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28.06.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.60	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CTCE/BBMP/W.No.07/KRIDL/QB/2014-15 10.07.2014

TEST REPORT

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	:	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	10.07.2014

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl. No	Description	Test Result	Requirement as per IS:73:2006
1	Penetration at 25 ^{0}C, 1/10 mm	86	80 to 100
2	Softening point, ^{0}C	52	Min. 40
3	Ductility at 27^{0}C, cm	100 >	Min. 75
4	Flash Point, ^{0}C	380	Min. 220

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Job No: CTCE/BBMP/W.No.07/KRIDL/SDBC(QB)/2014-15 12.07.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements of Roads at Ward No.07, Byatarayanapura in Ajjana, Muneshwara Layout, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE ID	:	Bitumen
DAT OF TESTING	:	12.07.2014

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	92	80 to 100
2	Softening point, °C	IS :1205 -1978 (RA-2009)	51	Min. 40
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	286	Min. 220

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